

## Technical data sheet

### Inductive switch

Part no.: 50114213

IS 244PP/44-20E-TB.4

#### Contents

- Technical data
- Dimensioned drawings
- Electrical connection
- Diagrams
- Operation and display
- Part number code
- Notes



For illustration purposes only



## Technical data

### Basic data

|                                   |               |
|-----------------------------------|---------------|
| Series                            | 244           |
| type. operating range limit $S_n$ | 20 mm         |
| Operating range $S_a$             | 0 ... 16.2 mm |

### Special version

|                 |            |
|-----------------|------------|
| Special version | Antivalent |
|-----------------|------------|

### Characteristic parameters

|      |             |
|------|-------------|
| MTTF | 1,230 years |
|------|-------------|

### Electrical data

|                    |                              |
|--------------------|------------------------------|
| Protective circuit | Inductive protection         |
|                    | Polarity reversal protection |
|                    | Short circuit protected      |

### Performance data

|                                      |                                                                                                   |
|--------------------------------------|---------------------------------------------------------------------------------------------------|
| Supply voltage $U_B$                 | 10 ... 30 V, DC                                                                                   |
| Residual ripple                      | 0 ... 20 %, From $U_B$                                                                            |
| Open-circuit current                 | 0 ... 20 mA                                                                                       |
| Repeatability, max. (in % of $S_r$ ) | 10 %, For $U_B = 20 ... 30$ VDC, ambient temperature $T_a = 23^\circ\text{C} \pm 5^\circ\text{C}$ |
| Switching hysteresis                 | 5 %                                                                                               |

### Outputs

|                                     |            |
|-------------------------------------|------------|
| Number of digital switching outputs | 2 Piece(s) |
|-------------------------------------|------------|

### Switching outputs

|                         |            |
|-------------------------|------------|
| Voltage type            | DC         |
| Switching current, max. | 200 mA     |
| Residual current, max.  | 0.5 mA     |
| Voltage drop            | $\leq 2$ V |

### Switching output 1

|                     |                         |
|---------------------|-------------------------|
| Switching element   | Transistor, PNP         |
| Switching principle | NO contact – Antivalent |

### Switching output 2

|                     |                         |
|---------------------|-------------------------|
| Switching element   | Transistor, PNP         |
| Switching principle | NC contact – Antivalent |

### Time behavior

|                     |        |
|---------------------|--------|
| Switching frequency | 440 Hz |
| Readiness delay     | 80 ms  |

### Connection

|                       |            |
|-----------------------|------------|
| Number of connections | 1 Piece(s) |
|-----------------------|------------|

### Connection 1

|                    |                |
|--------------------|----------------|
| Function           | Signal OUT     |
|                    | Voltage supply |
| Type of connection | Terminal       |
| No. of pins        | 4 -pin         |

### Mechanical data

|                          |                                 |
|--------------------------|---------------------------------|
| Design                   | Cubic                           |
| Dimension (W x H x L)    | 40 mm x 40 mm x 118 mm          |
| Type of installation     | Embedded/flush                  |
| Housing material         | Plastic                         |
| Plastic housing          | PA 66                           |
| Sensing face material    | Plastic, Polyamide (PA 66)      |
| Net weight               | 225 g                           |
| Housing color            | Black                           |
| Type of fastening        | Through-hole mounting           |
| Standard measuring plate | 60 x 60 mm <sup>2</sup> , Fe360 |

### Operation and display

|                 |            |
|-----------------|------------|
| Type of display | LED        |
| Number of LEDs  | 4 Piece(s) |

### Environmental data

|                                |               |
|--------------------------------|---------------|
| Ambient temperature, operation | -25 ... 85 °C |
| Ambient temperature, storage   | -25 ... 85 °C |

### Certifications

|                                                    |               |
|----------------------------------------------------|---------------|
| Degree of protection                               | IP 68         |
|                                                    | IP 69K        |
| Protection class                                   | II            |
| Approvals                                          | c UL US       |
| Test procedure for EMC in accordance with standard | IEC 61000-4-2 |
|                                                    | IEC 61000-4-3 |
|                                                    | IEC 61000-4-4 |
| Standards applied                                  | IEC 60947-5-2 |

### Correction factors

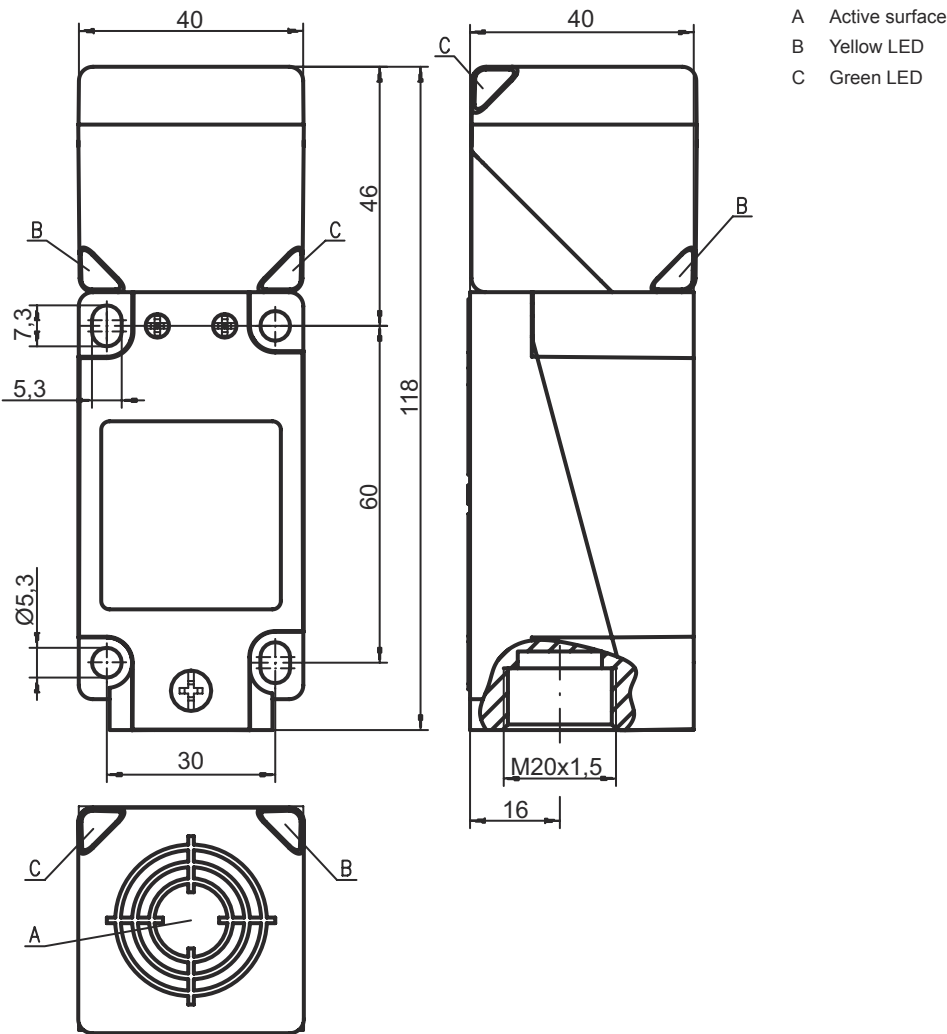
|                 |      |
|-----------------|------|
| Aluminum        | 0.33 |
| Stainless steel | 0.74 |
| Copper          | 0.31 |
| Brass           | 0.38 |
| Fe360 steel     | 1    |

### Classification

|                       |          |
|-----------------------|----------|
| Customs tariff number | 85365019 |
| ECLASS 5.1.4          | 27270101 |
| ECLASS 8.0            | 27270101 |
| ECLASS 9.0            | 27270101 |
| ECLASS 10.0           | 27270101 |
| ECLASS 11.0           | 27270101 |
| ECLASS 12.0           | 27274001 |
| ECLASS 13.0           | 27274001 |
| ECLASS 14.0           | 27274001 |
| ECLASS 15.0           | 27274001 |
| ETIM 5.0              | EC002714 |
| ETIM 6.0              | EC002714 |
| ETIM 7.0              | EC002714 |
| ETIM 8.0              | EC002714 |
| ETIM 9.0              | EC002714 |
| ETIM 10.0             | EC002714 |

Dimensioned drawings

All dimensions in millimeters



Electrical connection

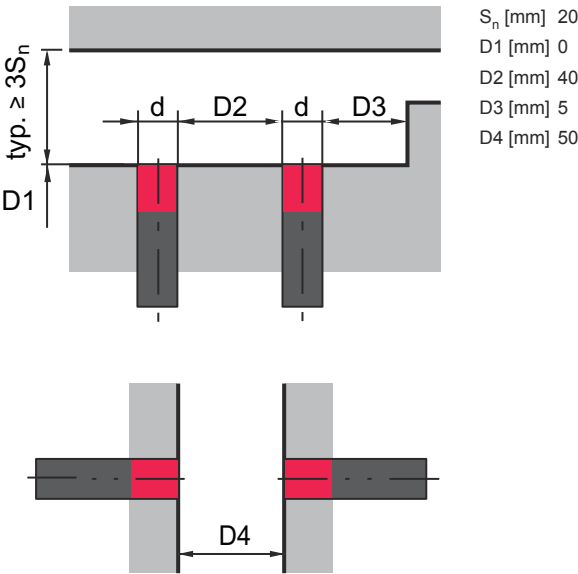
Connection 1

|                    |                |
|--------------------|----------------|
| Function           | Signal OUT     |
|                    | Voltage supply |
| Type of connection | Terminal       |
| No. of pins        | 4 -pin         |

| Terminal | Assignment |
|----------|------------|
| 1        | V+         |
| 2        | OUT 2      |
| 3        | GND        |
| 4        | OUT 1      |

Diagrams

Embedded/flush installation



Typical approach curve



- a Standard measuring plate
- b Diameter of the active surface
- c Switching point
- d Hysteresis

Operation and display

| LED | Display                  | Meaning                          |
|-----|--------------------------|----------------------------------|
| 1   | Yellow, continuous light | Switching output/switching state |
| 2   | Green, continuous light  | Operational readiness            |
| 3   | Yellow, continuous light | Switching output/switching state |
| 4   | Green, continuous light  | Operational readiness            |

## Part number code

Part designation: **ISX YYY ZZ/AAA.BB-CCC-DDD-DDD**

|            |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      |
|------------|------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| <b>ISX</b> | <b>Operating principle / construction</b><br>IS: inductive switch, standard design<br>ISS: inductive switch, short construction                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      |
| <b>YYY</b> | <b>Series</b><br>203: series with Ø 3 mm<br>204: series with Ø 4 mm<br>205: series with M5 x 0.5 external thread<br>206: series with Ø 6.5 mm<br>208: series with M8 x 1 external thread<br>212: series with M12 x 1 external thread<br>218: series with M18 x 1 external thread<br>230: series with M30 x 1.5 external thread<br>240: series in cubic design<br>244: series in cubic design<br>255: series with 5 x 5 mm <sup>2</sup> cross section<br>288: series with 8 x 8 mm <sup>2</sup> cross section                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         |
| <b>ZZ</b>  | <b>Housing / thread</b><br>MM: metal housing (active surface: plastic) / metric thread<br>FM: Full-metal housing (active surface: stainless steel AISI 316L) / metric thread<br>MP: metal housing (active surface: plastic) / smooth (without thread)<br>.2: New version                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             |
| <b>AAA</b> | <b>Output current / supply</b><br>4NO: PNP transistor, NO contact<br>4NC: PNP transistor, NC contact<br>2NO: NPN transistor, NO contact<br>2NC: NPN transistor, NC contact<br>1NO: relay, NO contact / AC/DC<br>1NC: Relay, NC contact / AC/DC<br>44: 2 PNP transistor switching outputs, antivalent (NO + NC)<br>22: 2 NPN transistor switching outputs, antivalent (NO + NC)<br>L: IO-Link interface<br>X: pin not used                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            |
| <b>BB</b>  | <b>Special equipment</b><br>n/a: no special equipment<br>5F: Food version<br>5: housing material V2A (1.4305, AISI 303)                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              |
| <b>CCC</b> | <b>Measurement range / type of installation</b><br>1E0: typ. range limit 1.0 mm / embedded/flush installation<br>1E5: typ. range limit 1.5 mm / embedded/flush installation<br>2E0: typ. range limit 2.0 mm / embedded/flush installation<br>3E0: typ. range limit 3.0 mm / embedded/flush installation<br>4E0: typ. range limit 4.0 mm / embedded/flush installation<br>5E0: typ. range limit 5.0 mm / embedded/flush installation<br>6E0: typ. range limit 6.0 mm / embedded/flush installation<br>8E0: typ. range limit 8.0 mm / embedded/flush installation<br>10E: typ. range limit 10.0 mm / embedded/flush installation<br>12E: typ. range limit 12.0 mm / embedded/flush installation<br>15E: typ. range limit 15.0 mm / embedded/flush installation<br>20E: typ. range limit 20.0 mm / embedded/flush installation<br>22E: typ. range limit 22.0 mm / embedded/flush installation<br>2N5: typ. range limit 2.5 mm / non-embedded/non-flush installation<br>4N0: typ. range limit 4.0 mm / non-embedded/non-flush installation<br>8N0: typ. range limit 8.0 mm / non-embedded/non-flush installation<br>10N: typ. range limit 10.0 mm / non-embedded/non-flush installation<br>12N: typ. range limit 12.0 mm / non-embedded/non-flush installation<br>14N: typ. range limit 14.0 mm / non-embedded/non-flush installation<br>15N: typ. range limit 15.0 mm / non-embedded/non-flush installation<br>20N: typ. range limit 20.0 mm / non-embedded/non-flush installation<br>22N: typ. range limit 22.0 mm / non-embedded/non-flush installation<br>25N: typ. range limit 25.0 mm / non-embedded/non-flush installation<br>40N: typ. range limit 40.0 mm / non-embedded/non-flush installation |

Part number code

|                                                                                  |                                                                                                                                                                                                                                                                                                                                                                                                  |
|----------------------------------------------------------------------------------|--------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| DDD                                                                              | <b>Electrical connection</b><br>n/a: cable, standard length 2000 mm<br>S12: M12 connector, 4-pin, axial<br>200-S12: cable, length 200 mm with M12 connector, 4-pin, axial<br>200-S8.3: cable, length 200 mm with M8 connector, 3-pin, axial<br>S8.3: M8 connector, 3-pin, axial<br>005-S8.3: cable, length 500 mm with M8 connector, 3-pin, axial<br>050: cable, standard length 5000 mm, 3-wire |
| <b>Note</b>                                                                      |                                                                                                                                                                                                                                                                                                                                                                                                  |
|  | A list with all available device types can be found on the Leuze website at <a href="http://www.leuze.com">www.leuze.com</a> .                                                                                                                                                                                                                                                                   |

Notes

|                                                                                                                 |                                                                                                                                                                                                                                  |
|-----------------------------------------------------------------------------------------------------------------|----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
|  <b>Observe intended use!</b>  |                                                                                                                                                                                                                                  |
|                                 | <p>This product is not a safety sensor and is not intended as personnel protection.</p> <p>The product may only be put into operation by competent persons.</p> <p>Only use the product in accordance with its intended use.</p> |
|  <b>For UL applications:</b> |                                                                                                                                                                                                                                  |
|                               | For UL applications, use is only permitted in Class 2 circuits in accordance with the NEC (National Electric Code).                                                                                                              |